Formal Pseudodifferential Operators in One and Several Variables, Central Extensions, and Integrable Systems

Jarnishs Beltran, Enrique G. Reyes

Advances in Mathematical Physics
Volume 2015 (2015), Article ID 210346, 16 pages

http://dx.doi.org/10.1155/2015/210346

Received 22 February 2015; Accepted 19 May 2015

Abstract

We review some aspects of the theory of Lie algebras of (twisted and untwisted) formal pseudodifferential operators in one and several variables in a general algebraic context. We focus mainly on the construction and classification of nontrivial central extensions. As applications, we construct hierarchies of centrally extended Lie algebras of formal differential operators in one and several variables, Manin triples and hierarchies of nonlinear equations in Lax and zero curvature form.